

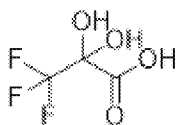
Message

From: Strynar, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=5A9910D5B38E471497BD875FD329A20A-STRYNAR, MARK]
Sent: 11/7/2018 9:09:54 PM
To: Zhang, Zhenfa [zhenfaz@email.unc.edu]
CC: McCord, James [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=McCord, James]
Subject: RE: great meeting with you last week at EPA

Okay I will look.

Mark

From: Zhang, Zhenfa <zhenfaz@email.unc.edu>
Sent: Wednesday, November 07, 2018 3:30 PM
To: Strynar, Mark <strynar.mark@epa.gov>; Surratt, Jason D. <surratt@unc.edu>
Cc: Bodnar, Wanda M <wanda_bodnar@unc.edu>; Khan, Manal <manalk@email.unc.edu>; Warren, Jeffrey Dennis <jeff.warren@unc.edu>; Turpin, Barbara <bjturpin@email.unc.edu>; Baumann, Karsten <kaba@email.unc.edu>; Riedel, Theran <Riedel.Theran@epa.gov>; Offenberger, John <Offenberger.John@epa.gov>
Subject: RE: great meeting with you last week at EPA



Mark,

Here it is. If you can't see it, please let me know or you can check it up in Scifinder CAS: 10321-14-9. Thank you, Zhenfa

From: Strynar, Mark <Strynar.Mark@epa.gov>
Sent: Wednesday, November 07, 2018 2:55 PM
To: Zhang, Zhenfa <zhenfaz@email.unc.edu>; Surratt, Jason D. <surratt@unc.edu>
Cc: Bodnar, Wanda M <wanda_bodnar@unc.edu>; Khan, Manal <manalk@email.unc.edu>; Warren, Jeffrey Dennis <jeff.warren@unc.edu>; Turpin, Barbara <bjturpin@email.unc.edu>; Baumann, Karsten <kaba@email.unc.edu>; Riedel, Theran <Riedel.Theran@epa.gov>; Offenberger, John <Offenberger.John@epa.gov>
Subject: RE: great meeting with you last week at EPA

Zenhfa,

If you can draw me out the structure of what to look for, I can go look for it.

Mark

From: Zhang, Zhenfa <zhenfaz@email.unc.edu>
Sent: Wednesday, November 07, 2018 2:26 PM
To: Surratt, Jason D. <surratt@unc.edu>; Strynar, Mark <strynar.mark@epa.gov>
Cc: Bodnar, Wanda M <wanda_bodnar@unc.edu>; Khan, Manal <manalk@email.unc.edu>; Warren, Jeffrey Dennis

<jeff.warren@unc.edu>; Turpin, Barbara <bjturpin@email.unc.edu>; Baumann, Karsten <kaba@email.unc.edu>; Riedel, Theran <Riedel.Theran@epa.gov>; Offenberger, John <Offenberger.John@epa.gov>

Subject: RE: great meeting with you last week at EPA

Hi Jason,

As we stepped into this new area I had looked into the literature. The poly fluoro substitution seems to change the property and reactivity of a chemical quite significantly compared to its proton analog. Even though both IEPOS and HFPO have epoxide in their structure, their reactivity profile would be quite different. Acid catalyzed epoxide hydrolysis and solvolysis is the most common transformation of the epoxide of IEPOX, but epoxide in HFPO is much more likely to undergo nucleophilic attack by nucleophile like amine or thiol group. There were report of HFPO react with water in dioxane to yield trifluoropyruvic acid hydrate. I don't know if Mark already sees that, but that could be one of what we can look for. This is not to rule out the formation of sulfate, but my feeling it that if it is formed, it is probably due to the nucleophilic attack of sulfate compared to acid catalysis, and the factor to affect the reaction will be different. That is my two cents.

Best,

Zhenfa

From: Surratt, Jason D.

Sent: Monday, November 05, 2018 12:36 PM

To: Strynar, Mark <strynar.mark@epa.gov>

Cc: Bodnar, Wanda M <wanda_bodnar@unc.edu>; Khan, Manal <manalk@email.unc.edu>; Warren, Jeffrey Dennis <jeff.warren@unc.edu>; Turpin, Barbara <bjturpin@email.unc.edu>; Baumann, Karsten <kaba@email.unc.edu>; Zhang, Zhenfa <zhenfaz@email.unc.edu>; Riedel, Theran <Riedel.Theran@epa.gov>; Offenberger John <Offenberger.John@epa.gov>

Subject: great meeting with you last week at EPA

Hi Mark,

Thank you again for you and your colleagues taking the time to meet with me after my research seminar last week!

I wanted to followup with you on three specific items:

- 1.) I know you said you were still finalizing your newest poster that summarizes all the PFASs that you have detected or know to be out there. Once you are ready, we would love to have a copy of this poster. If you send us a copy, are you ok with us sharing with all PIs, students, and Post Docs associated with the PFAST Network?
- 2.) Wanda informed me that Zhenfa Zhang is currently working on the synthesis for Nafion BP2. However, we are waiting for all the reagents to come in that we ordered.
- 3.) I'm really curious whether you will find the potential acid-catalyzed multiphase chemical reaction products of HFPO (see Scheme below) in your water samples previously analyzed by your LC/ESI-MS methods? Since fine aerosol particles in the southeastern U.S. are known to contain acidic water with large quantities of sulfate (with pHs approaching zero in some instances, but averaging around 1-2), it is likely that HFPO could undergo the reactions I proposed below. This is similar to isoprene epoxydiols (IEPOX) that forms from the atmospheric oxidation of isoprene in the gas phase (see Figure 3 from Surratt et al., 2010, attached here). I attached previous publications if you are curious in our approach to understanding this process with IEPOX. Theran conducted some of the kinetic work

in my lab when he was a Post Doc at UNC (I've also attached copies of that work). I'm glad to see Theran is on your team now.

We plan to take some similar approaches with HFPO in Barb's lab and my lab. Some of Barb's new tools are really helping us unravel the importance of acid-catalyzed multiphase chemistry of atmospherically relevant epoxides. You should note that we now know that acid-catalyzed multiphase chemistry of IEPOX yields 30-40% of total organic aerosol mass found within PM_{2.5}! So, it's possible if a lot of HFPO has been emitted, you could see some of the products below in some of your samples.

Jason

Jason D. Surratt, Ph.D.
Professor
Program Director of the N.C. Per- and Polyfluoroalkyl Substance Testing (PFAST) Network
Co-Director, Undergraduate Studies, Environmental Sciences & Engineering

Department of Environmental Sciences & Engineering
Gillings School of Global Public Health
University of North Carolina at Chapel Hill
164 Rosenau Hall, CB # 7431
Chapel Hill, NC 27599
Email: surratt@unc.edu
Office Phone: 1-(919)-966-0470
[Surratt Website](#)